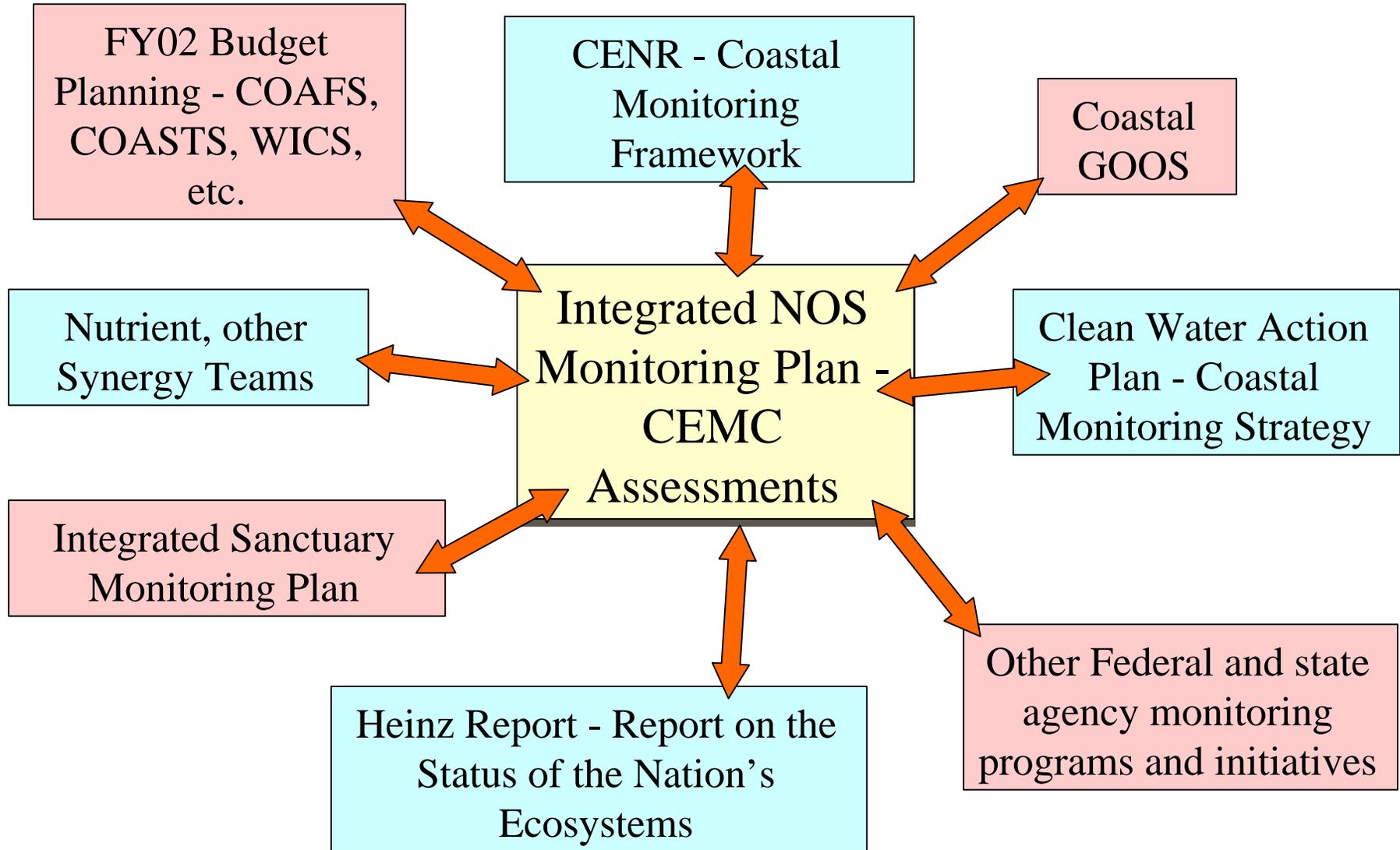


Dr. Foster's charge to develop a
NOS Coastal Environmental Monitoring Plan :

“address all activities conducted or supported by NOS related to the regular collection, management, analysis, and dissemination of environmental monitoring and observational data and information. The Plan should **summarize existing and planned NOS efforts, recommend ways to improve NOS's effectiveness and efficiency of those efforts, and provide estimates of the resources necessary to fully implement NOS's responsibilities in this area**”

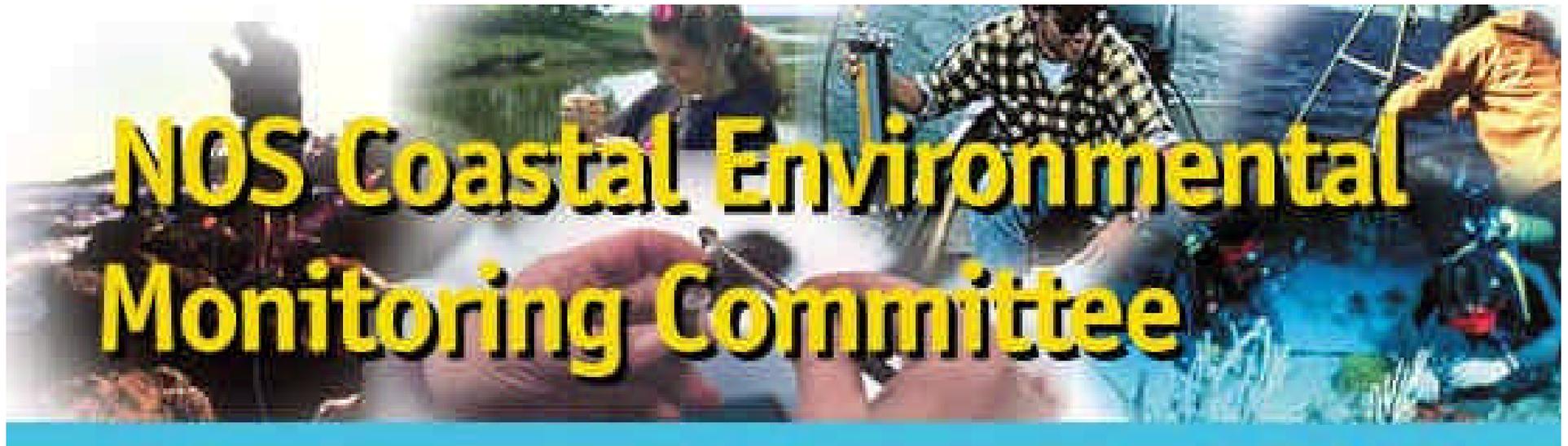
Integrating with Other Activities



Accomplishments to Date



- Identified Monitoring Needs for FY02 Investments
- Completed Surveys for 23 programs plus 11 sanctuaries
- Developed CEMC Website
- Compiled GIS coverages for 22 programs and are testing interactive web mapping capability
- Distributed *Report I: Current NOS Environmental Monitoring Activities* for review
- Identified plan and schedule for subsequent gap analyses and recommendations



Working Definition

NOS Coastal Environmental Monitoring consists of all activities conducted or supported by NOS involving the **sustained collection of measurements, often repetitive**, taken to establish **a baseline** or to **determine a trend in environmental conditions** and including the management, analysis, and dissemination of these measurements.

Elements of an Integrated Monitoring Strategy

Defining Needs and Integrated Planning

- Identify Stewardship Responsibilities
- Identify Priority Problems/Issues of Concern
- Build Monitoring Inventory
- Identify partnerships and integration opportunities

Methods Development and Research

- Analytical techniques
- Monitoring equipment and protocols
- Model building

Data Acquisition

- Operational monitoring
- Baseline characterization or repetitive measurements
- Varying time and space scales

Data Delivery

- QA/QC procedures
- Dissemination to users

Assessment Products

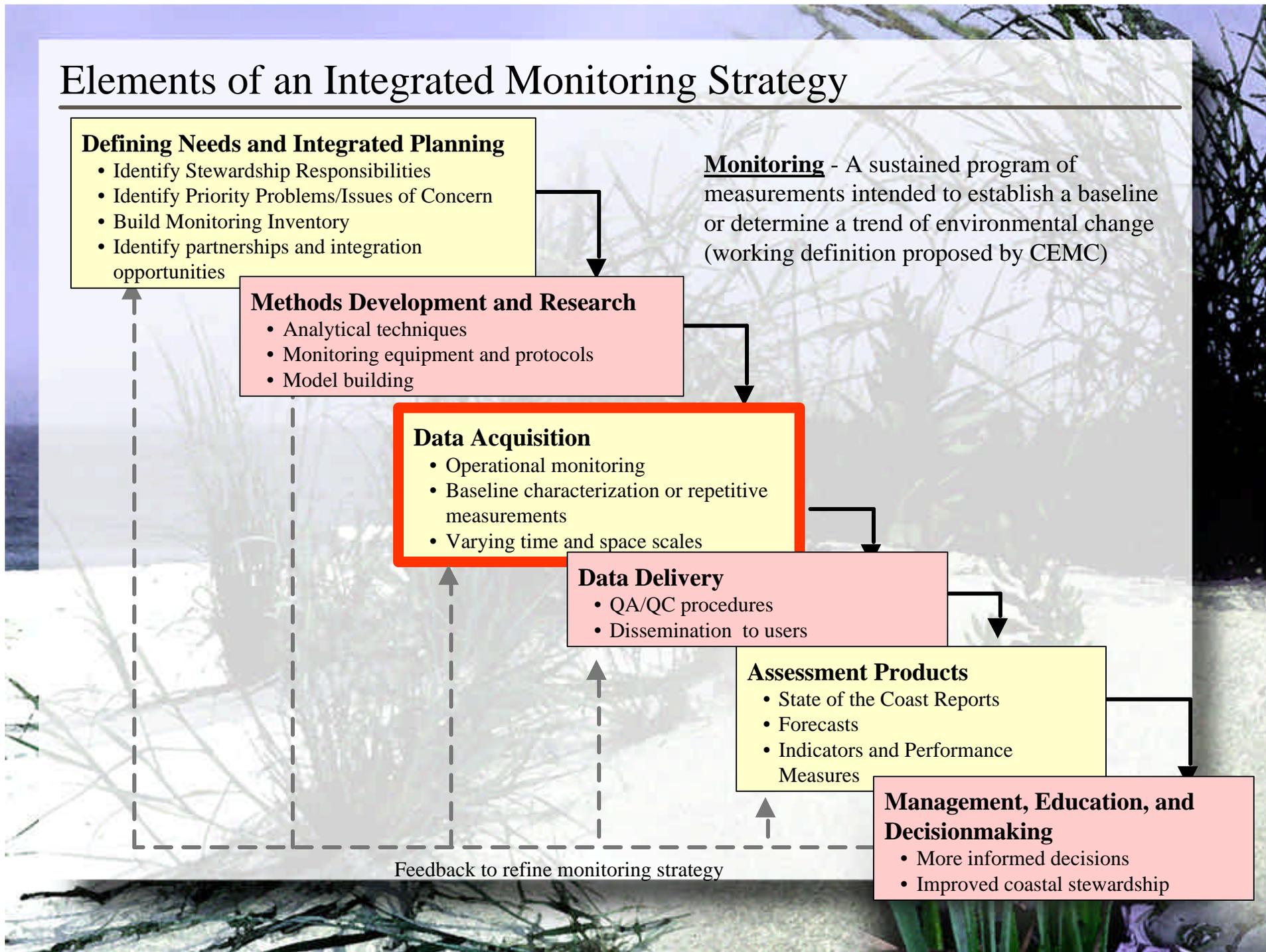
- State of the Coast Reports
- Forecasts
- Indicators and Performance Measures

Management, Education, and Decisionmaking

- More informed decisions
- Improved coastal stewardship

Monitoring - A sustained program of measurements intended to establish a baseline or determine a trend of environmental change (working definition proposed by CEMC)

Feedback to refine monitoring strategy



Operational Monitoring Inventory

- Program Type
- Program Name
- Purpose **Ö**
- Mandates/Authorizations
- Monitoring Focus
- Target Parameter Groups
- Temporal Characteristics
- Users/Customers
- Funding Amounts
- Availability of Data
- Tier (1,2,3) **Ö**
- Products

Ö Uses frameworks developed through CENR and Coastal GOOS

Operational Monitoring Inventory - Preliminary Findings



- 23 Programs currently surveyed
- Primary focus is monitoring for Healthy Marine Ecosystems and Safe Marine Operations
- Mix of National (Tier I) and more site-specific, cause and effect monitoring (Tiers II and III)
- FY00 Investment still being determined

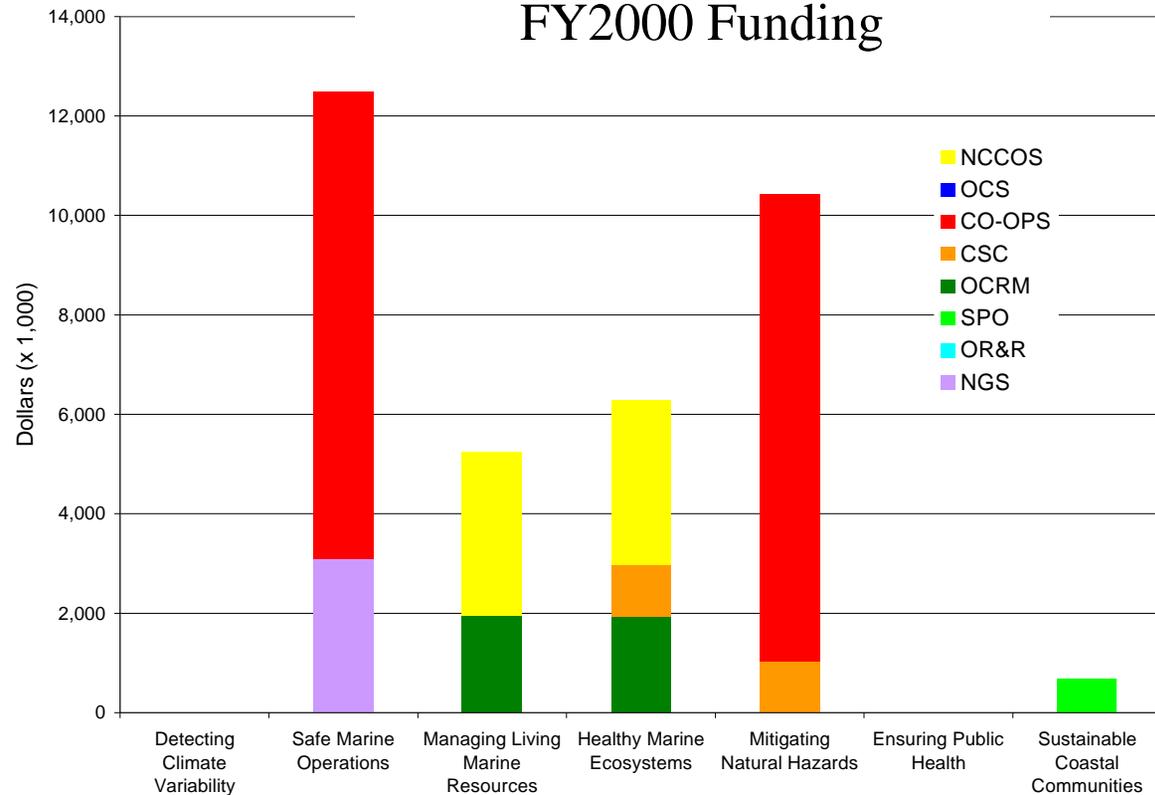
Operational Inventory Results

Monitoring Programs

Draft

Program	Monitoring Focus (Adapted from US GOOS Framework)							Scale			FY00 NOS Total Investment (in \$ millions)
	Detecting Climate Variability	Safe Marine Operations	Managing Living Marine Resources	Healthy Marine Ecosystems	Mitigating Natural Hazards	Ensuring Public Health	Sustainable Coastal Communities	Tier I	Tier II	Tier III	
NS&T Mussel Watch											
NS&T Bioeffects Survey											
<i>NS&T Benthic Surveillance*</i>											
Coastal Intensive Site Network (CISNet)											
Coral Reef Mapping											
<i>Coral Reef Monitoring**</i>											
Florida Keys NMS - Zoning Monitoring											
South Florida Benthic Communities											
Harmful Algal Blooms (EcoHab?)											
Mississippi River Hypoxia (Coastal Ocean Program)											
National Marine Sanctuaries (NMS) Monitoring											
National Estuarine Research Reserve System-wide Monitoring Program (SWMP)											
Land Cover Change Analysis											
Topographic Beach Change Mapping											
Benthic Habitat Assessment and Mapping:											
• Seagrass Mapping											
• Remote Sensing of Coral Reefs											
• Unconsolidated Sediments											

NOS Monitoring Programs by FY2000 Funding



Why NOS Monitors

Historical Perspective

- Physical side of house has been around since 1807
 - Tide predictions, hydrographic surveys, and geodesy
- Ecosystem monitoring much more recent and generally associated with the creation of NOAA
 - MESA and OCSEAP (1974) -- offshore and impact-oriented
 - National Status and Trends (1984) -- environmental quality in estuaries
 - NERRS SWMP (1995) and Sanctuaries (1994) -- environmental characterization in protected areas

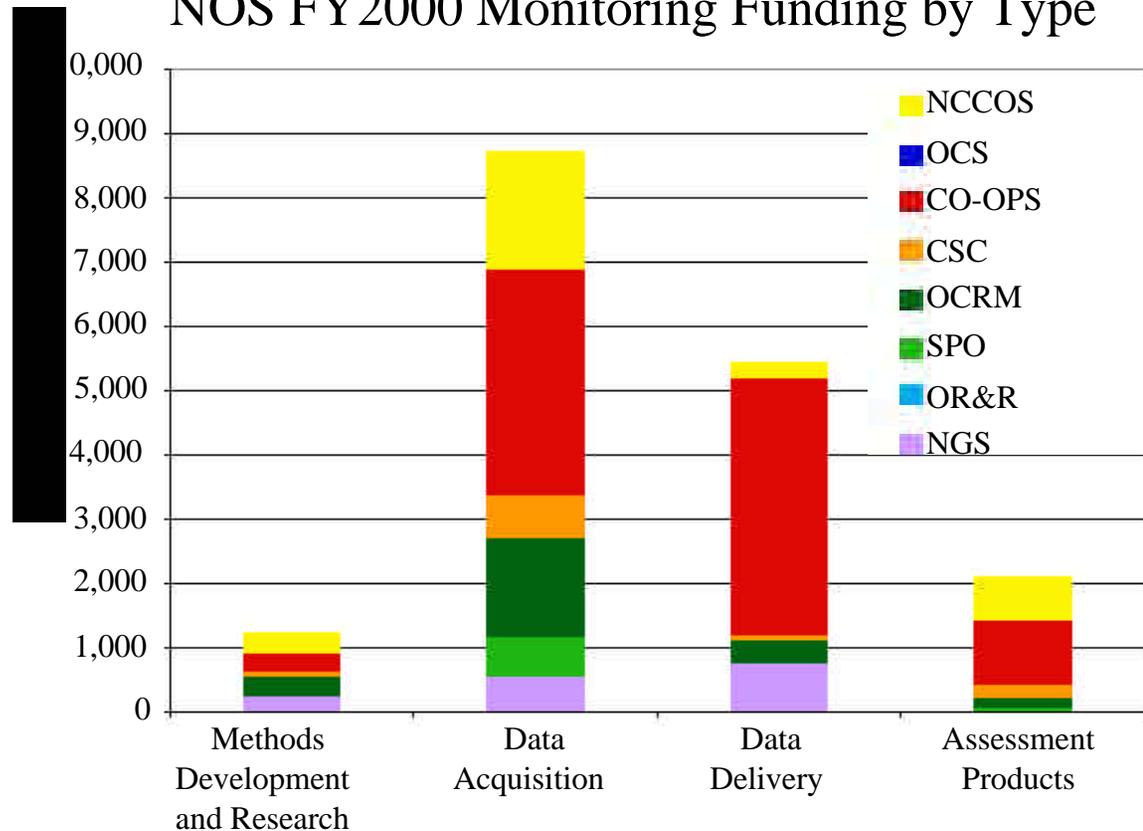
Operational Inventory Results

Monitoring Programs

Draft

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Land Cover Change Analysis											
Topographic Beach Change Mapping											
Benthic Habitat Assessment and Mapping: • Seagrass Mapping • Remote Sensing of Coral Reefs • Unconsolidated Sediments											

NOS FY2000 Monitoring Funding by Type



Why NOS Monitors

Drivers/Justifications

- Legislative Mandates
- NOS Mission/Strategic Plan
- Accumulated Responsibilities
- Performance Measurement?

Roles & Responsibilities

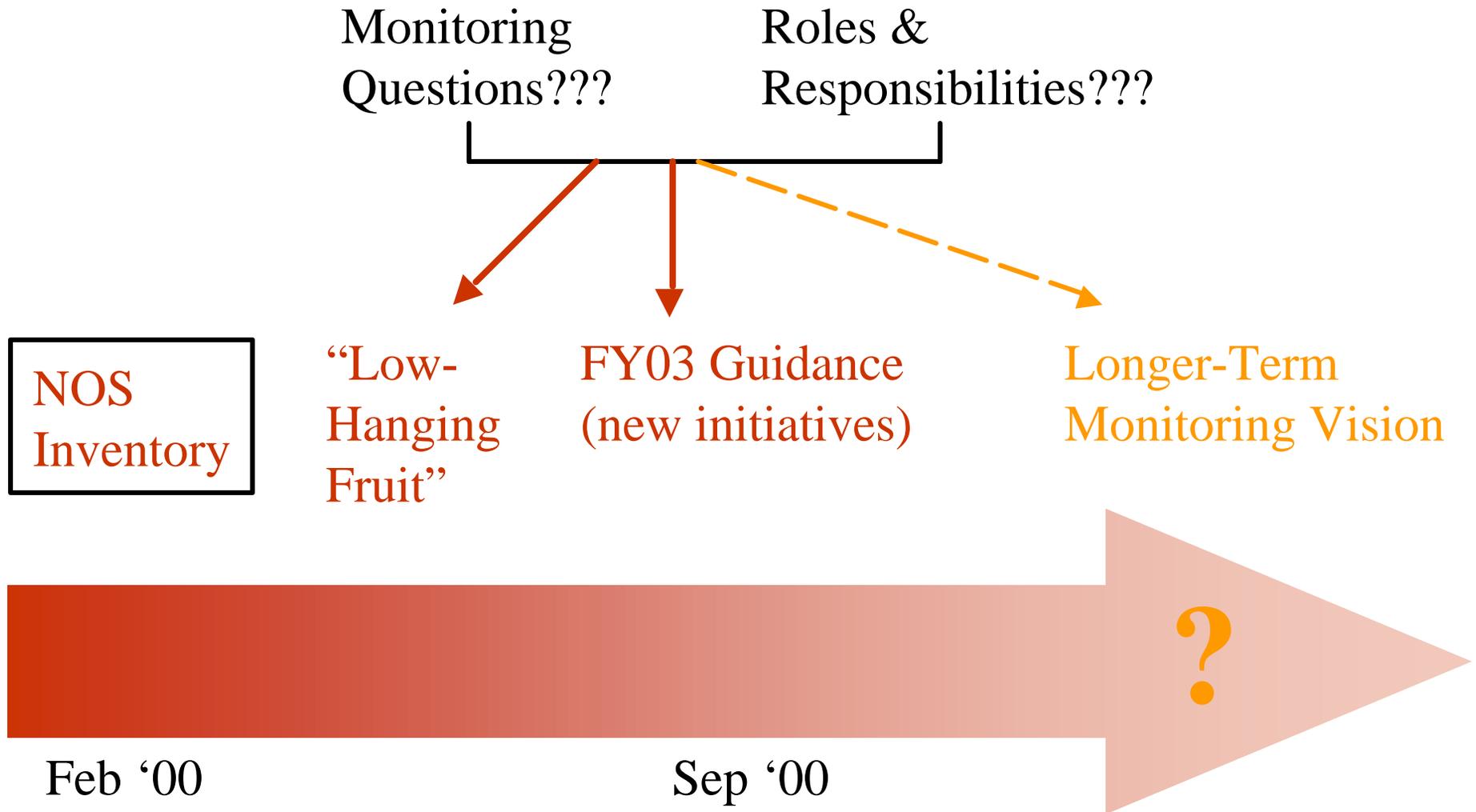
- Safe Navigation
- National Picture
- Marine Protected Areas
- Capacity Building
- Restoration
- Forecasting
- Research

Take Home Message

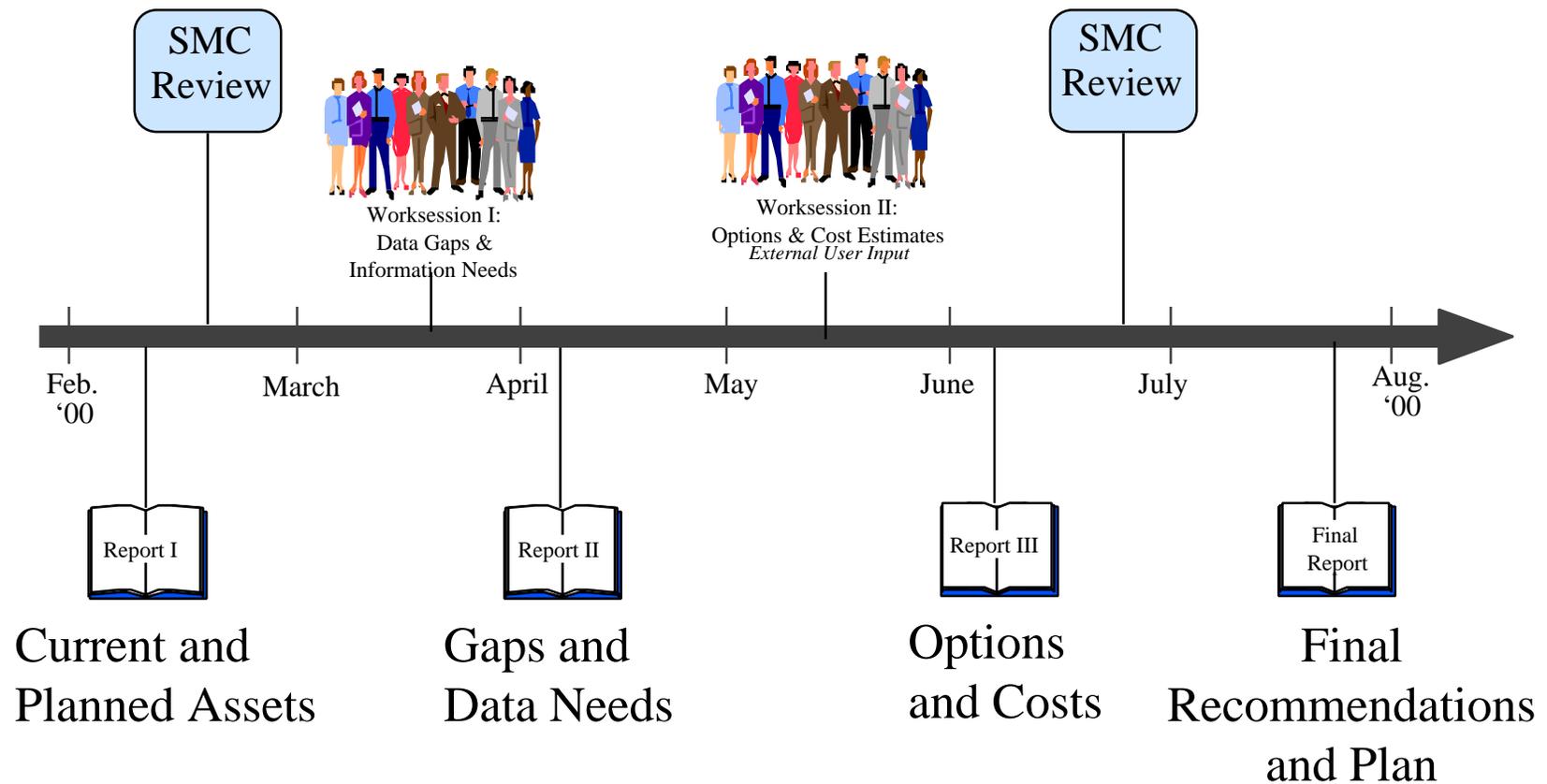


- Now have a capability to understand our monitoring program - we should maintain and improve it;
- Need to develop a strategic concept (vision) to understand our desired expansion path for NOS monitoring both thematically and geographically
- With the above in place, NOS will have the information base and plan to more effectively compete for resources to achieve its coastal stewardship mission

Where Are We Going?



Timeline



Next Steps -- Gap Analysis

		Possible Priority Issues					
		Eutrophication	Habitat Loss	Coral Reefs	Contaminants	Invasive Species	Water Level
Roles & Responsibilities	National Picture	<u>Proposal</u> -- convene a series of roundtable discussions with NOS offices to determine monitoring priorities and to develop questions to be answered by monitoring					
	Marine Protected Areas						
	Capacity-Building						
	Forecasting						
	Research						
	Safe Navigation						

CEMC Web Site Tour



[NOS Home](#)

[Materials for CEMC Report](#)

Review and comment on draft versions of the CEMC Report. Review relevant background materials in Portable Document Format (PDF).

[Member List](#)

See CEMC work group member names and contact information.

[Map Monitoring Programs](#)

*****UNDER CONSTRUCTION*****

Use an interactive mapping tool (ArcIMS Beta 3.0) to view data and compare monitoring programs. Zoom, pan, turn layers on/off, and list data. Because this is a beta version, please contact, [Alison Hammer](#) for user address.

[Image Gallery](#)

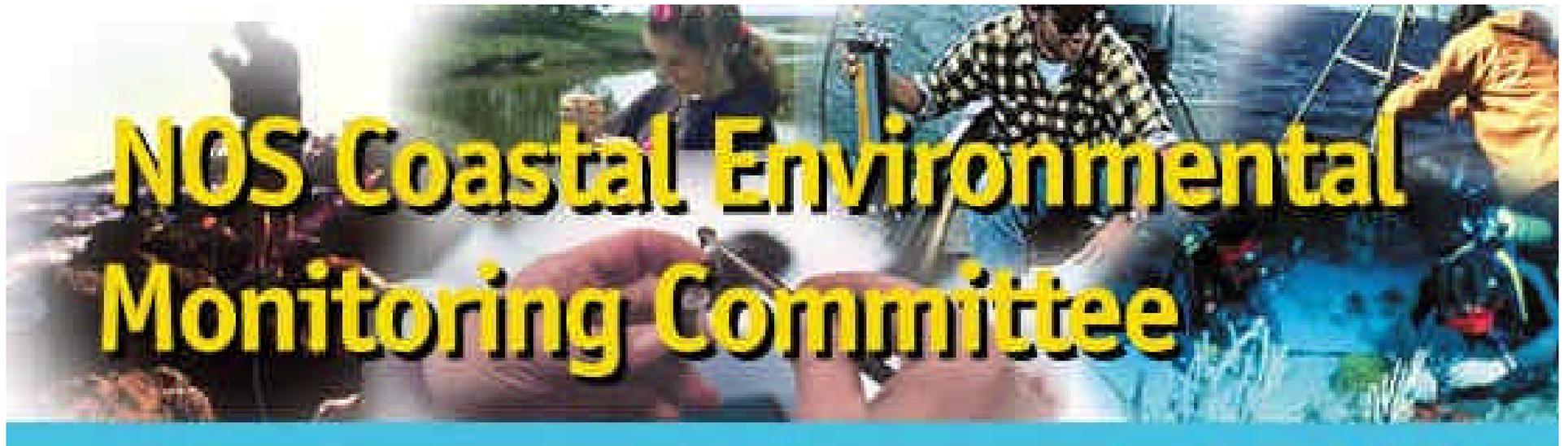
View pre-made maps of various NOS and other Federal monitoring programs. Save and print images.

[NOS Monitoring Program Inventory](#)

View characteristics of NOS monitoring programs.

[Relevant Web Links](#)

Link to NOS and other monitoring Web sites and to important on-line publications.

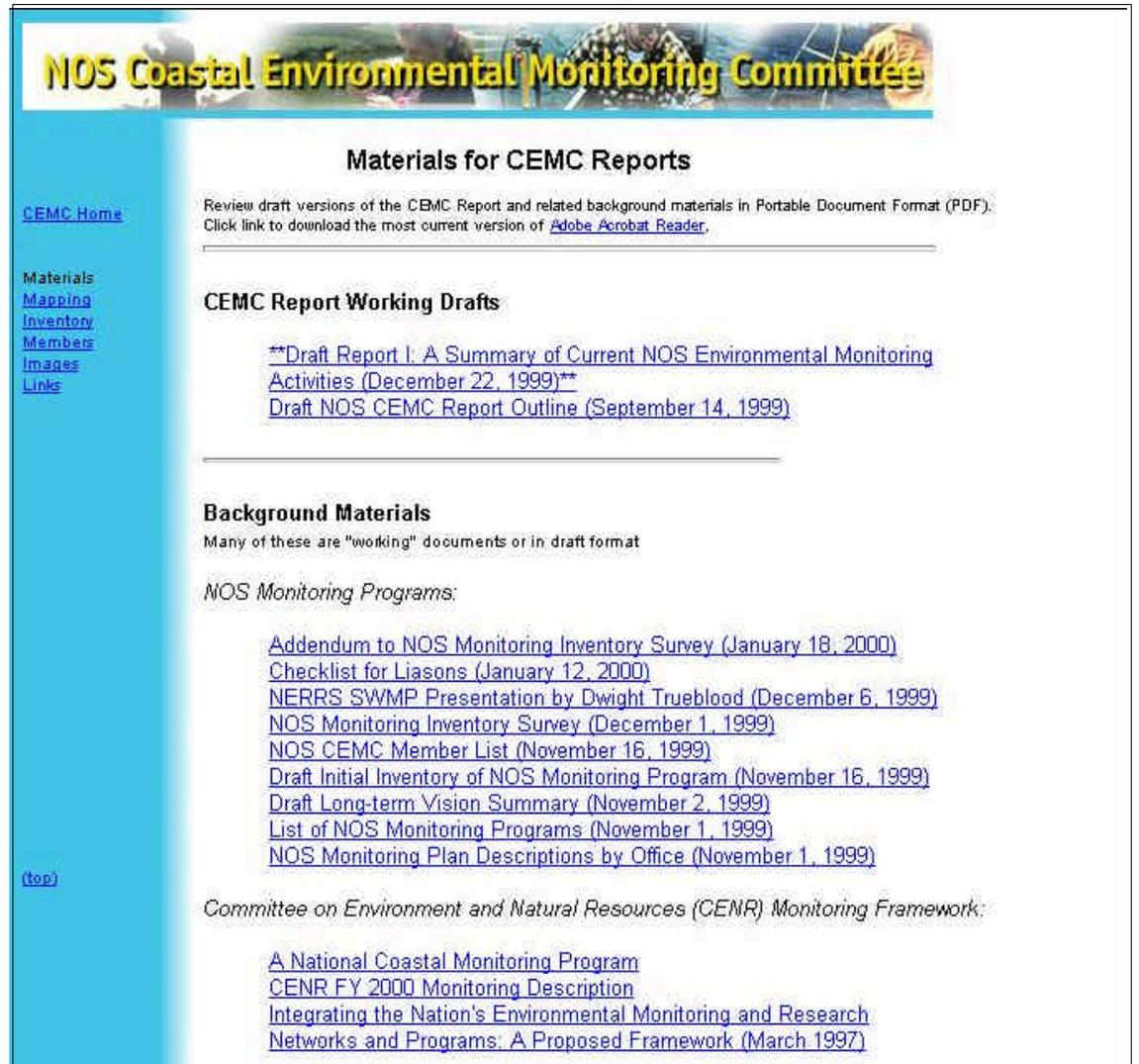


Visit the site at :

<http://is2.nos.noaa.gov/monitoring/cemc/>

Background Materials

- Report drafts
- Committee support materials
- Relevant reports and references



NOS Coastal Environmental Monitoring Committee

Materials for CEMC Reports

[CEMC Home](#)

Review draft versions of the CEMC Report and related background materials in Portable Document Format (PDF).
Click link to download the most current version of [Adobe Acrobat Reader](#).

CEMC Report Working Drafts

[**Draft Report I: A Summary of Current NOS Environmental Monitoring Activities \(December 22, 1999\)**](#)
[Draft NOS CEMC Report Outline \(September 14, 1999\)](#)

Background Materials

Many of these are "working" documents or in draft format

NOS Monitoring Programs:

- [Addendum to NOS Monitoring Inventory Survey \(January 18, 2000\)](#)
- [Checklist for Liasons \(January 12, 2000\)](#)
- [NERRS SWMP Presentation by Dwight Trueblood \(December 6, 1999\)](#)
- [NOS Monitoring Inventory Survey \(December 1, 1999\)](#)
- [NOS CEMC Member List \(November 16, 1999\)](#)
- [Draft Initial Inventory of NOS Monitoring Program \(November 16, 1999\)](#)
- [Draft Long-term Vision Summary \(November 2, 1999\)](#)
- [List of NOS Monitoring Programs \(November 1, 1999\)](#)
- [NOS Monitoring Plan Descriptions by Office \(November 1, 1999\)](#)

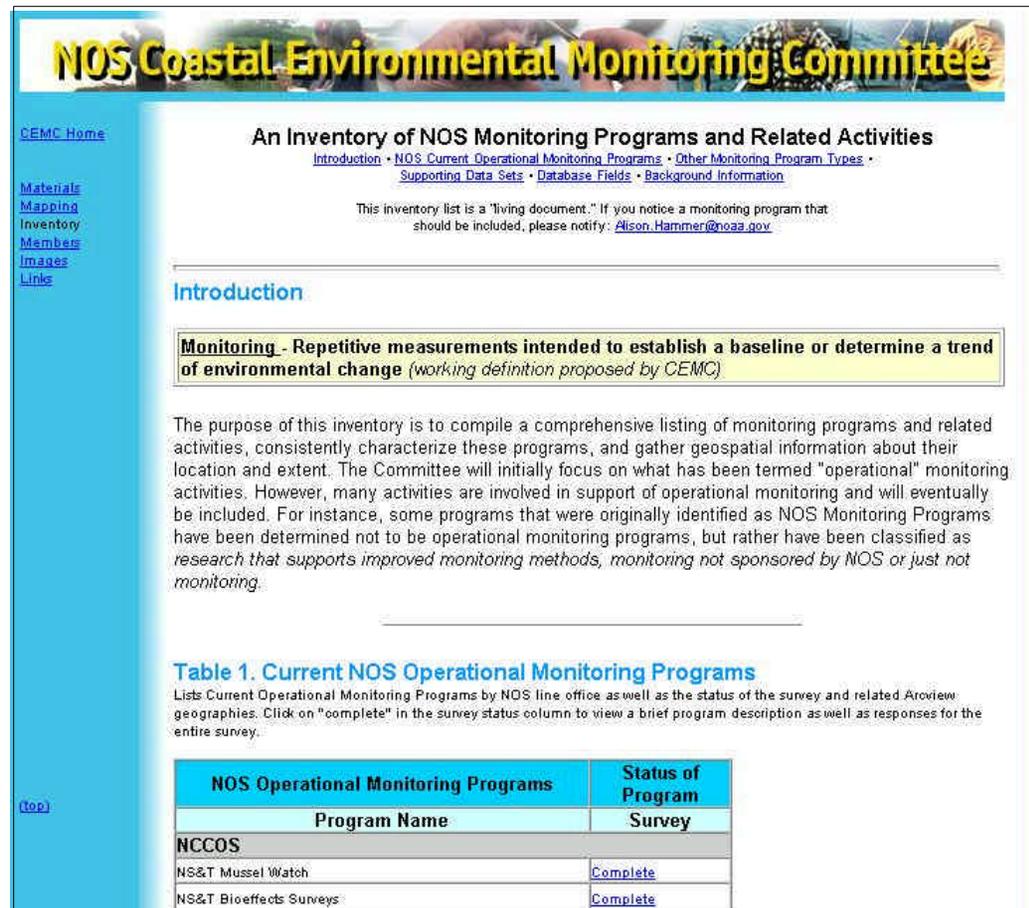
[\(top\)](#)

Committee on Environment and Natural Resources (CENR) Monitoring Framework:

- [A National Coastal Monitoring Program](#)
- [CENR FY 2000 Monitoring Description](#)
- [Integrating the Nation's Environmental Monitoring and Research Networks and Programs: A Proposed Framework \(March 1997\)](#)

Monitoring Inventory

- Table of Operational Monitoring Programs
- Survey results
- Other related programs



NOS Coastal Environmental Monitoring Committee

An Inventory of NOS Monitoring Programs and Related Activities

[Introduction](#) • [NOS Current Operational Monitoring Programs](#) • [Other Monitoring Program Types](#) • [Supporting Data Sets](#) • [Database Fields](#) • [Background Information](#)

This inventory list is a "living document." If you notice a monitoring program that should be included, please notify: Aison.Hammer@noaa.gov

Introduction

Monitoring - Repetitive measurements intended to establish a baseline or determine a trend of environmental change (working definition proposed by CEMC)

The purpose of this inventory is to compile a comprehensive listing of monitoring programs and related activities, consistently characterize these programs, and gather geospatial information about their location and extent. The Committee will initially focus on what has been termed "operational" monitoring activities. However, many activities are involved in support of operational monitoring and will eventually be included. For instance, some programs that were originally identified as NOS Monitoring Programs have been determined not to be operational monitoring programs, but rather have been classified as *research that supports improved monitoring methods, monitoring not sponsored by NOS or just not monitoring.*

Table 1. Current NOS Operational Monitoring Programs

Lists Current Operational Monitoring Programs by NOS line office, as well as the status of the survey and related Arcview geographies. Click on "complete" in the survey status column to view a brief program description as well as responses for the entire survey.

NOS Operational Monitoring Programs	Status of Program
Program Name	Survey
NCCOS	
NS&T Mussel Watch	Complete
NS&T Bioeffects Surveys	Complete

[\(top\)](#)

Image Gallery

- Quick visual summary
- National extent
- Regional view
- Program facts

The screenshot shows the 'Image Gallery' page of the NOS Coastal Environmental Monitoring Committee. The page features a blue header with the committee's name and a navigation menu on the left. The main content area displays four program thumbnails: NCCOS NS&T Benthic Surveillance, NCCOS NS&T Mussel Watch, NS&T Bioeffects Surveys, and Coastal Intensive Site Network (CISnet). Each thumbnail includes a map of the United States and a detailed program description.

NOS Coastal Environmental Monitoring Committee
Image Gallery

[NCCOS](#) • [OCS](#) • [CO-DPS](#) • [CSC](#) • [QCRM](#) • [SPD](#)

Click on thumbnail image below to view enlarged image describing NOS monitoring programs by line office.

NCCOS
NS&T Benthic Surveillance

NS&T Mussel Watch

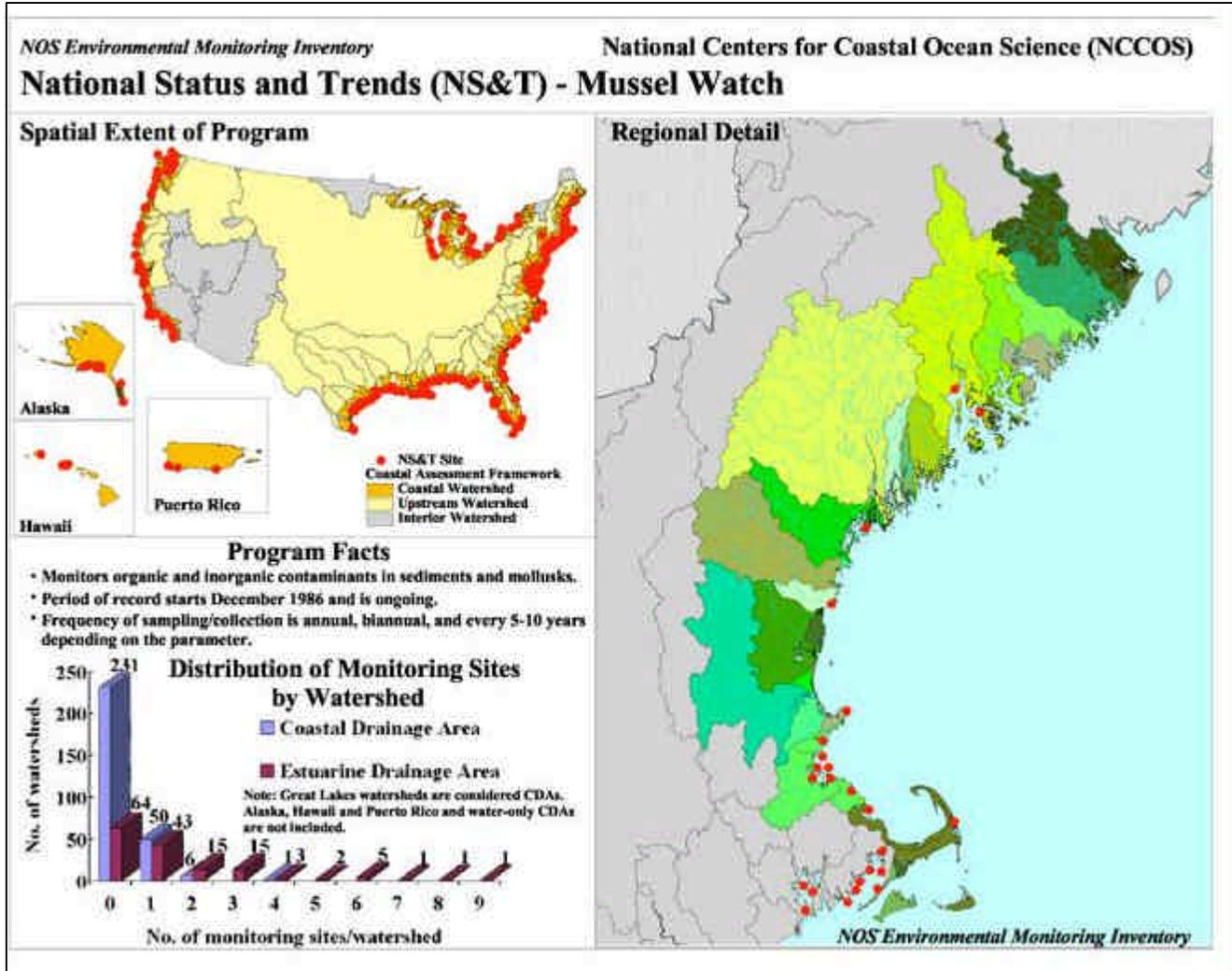
NS&T Bioeffects Surveys

Coastal Intensive Site Network (CISnet)

[CEMC Home](#)
[Materials](#)
[Mapping](#)
[Inventory](#)
[Members](#)
[Images](#)
[Links](#)

[\(top\)](#)

Image Gallery Blowup



Related Links

- Program specific links
- NOS site
- Other Federal agencies
- Interagency frameworks
- Legislative authorities



NOS Coastal Environmental Monitoring Committee

[CEMC Home](#)

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[Mapping](#)
[Inventory](#)
[Members](#)
[Images](#)
[Links](#)

Web Links
[National Ocean Service Monitoring Programs](#) • [Federal Monitoring Programs](#) • [Federal Monitoring Frameworks and Implementation Plans](#) • [Legislative Mandates/Authorizations](#)

National Ocean Service Monitoring Programs

National Centers for Coastal Ocean Science (NCCOS):

The Center for Coastal Monitoring and Assessment (CCMA): National Status and Trends (NS&T) Program
http://ccmaserver.nos.noaa.gov/NSandT/New_NSandT.html
NS&T measures the degree and effects of chemical contamination of the Nation's estuaries and their biota.

Beaufort, NC Laboratory Center for Coastal Fisheries and Habitat Research (CCFHR) NOS/NMFS Cooperative Research on Coastal Fisheries and Habitats
<http://shrimp.bea.nmfs.gov/labres.html>
CCFHR conducts research on: estuarine processes, biological productivity in nearshore and ocean ecosystems, dynamics of coastal and reef fishery resources, and the effects of anthropogenic influences on coastal habitats and resources.

Charleston, SC Laboratory Center for Coastal Environmental Health and Biomolecular Research (CCEHBR)
<http://www.chbr.noaa.gov/>
Chemical, biomolecular, microbiological, and histological methods are used in both laboratory and field studies to describe, evaluate, and predict the controlling factors and outcomes of natural and anthropogenic influences in marine and estuarine habitats.

Great Lakes Environmental Research Laboratory (GLERL)
<http://www.glerl.noaa.gov/data/>
GLERL's research provides Federal, State, and international decision and policy makers with scientific understanding of: the sources, pathways, fates, and effects of toxicants in the Great Lakes; natural hazards such as severe waves, storm surges, and ecosystems and their interactions, including the implications of invasion by nuisance species; the hydrology and water levels of the Great Lakes; and, the effects related to global climate change.

[\(top\)](#)

Interactive Mapping

Address http://140.90.161.143/website/NOSPrograms_HTML/default_ie.htm?Title=NOS%20Programs%20-%20HTML%20Viewer Go Links

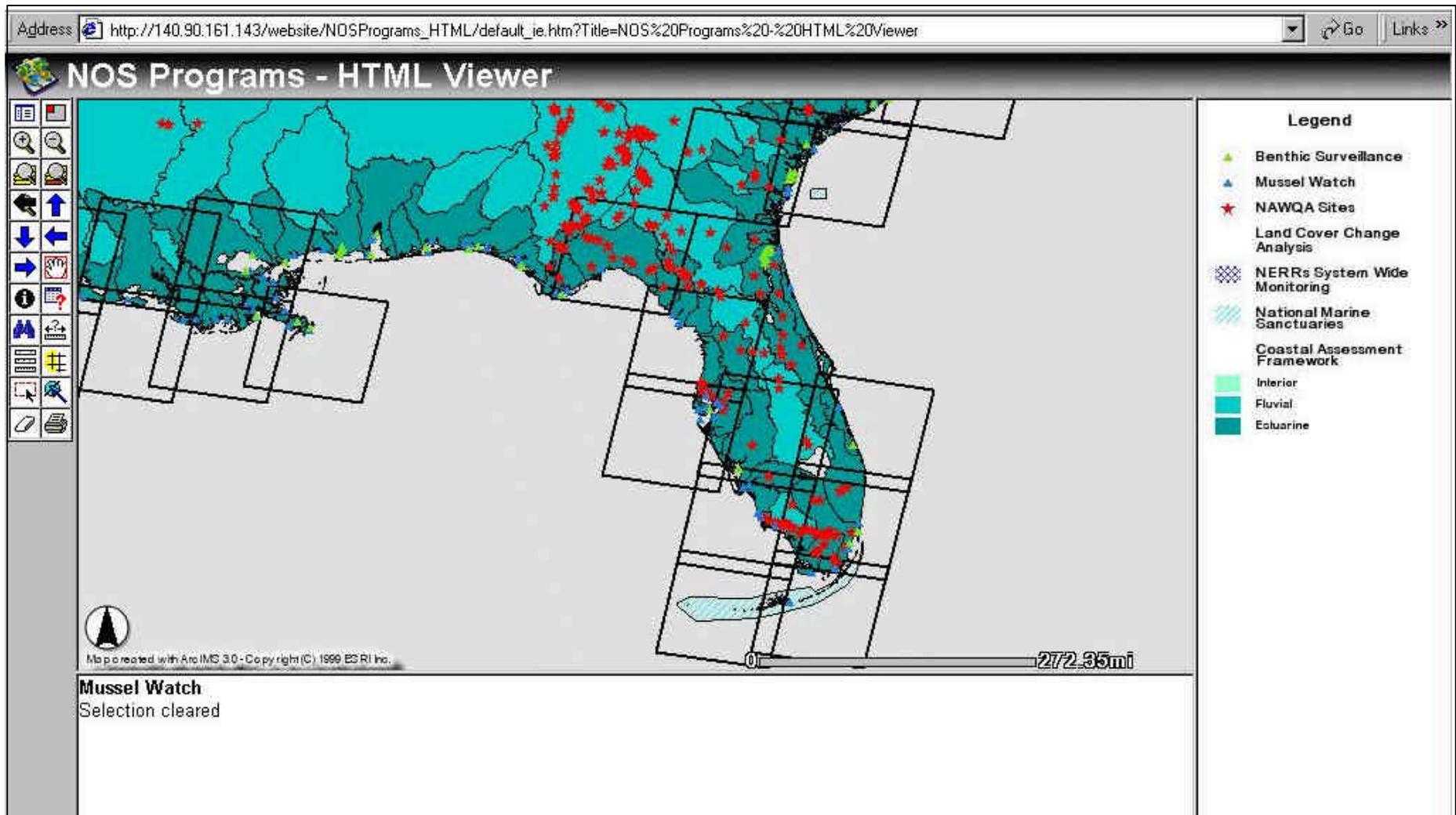
NOS Programs - HTML Viewer

- Benthic Surveillance
- Mussel Watch
- Bio-effects Survey
- Coastal Intensive Site Network
- PORTS
- Water Level Stations
- Tide Stations
- NAWQA Sites
- Land Cover Change Analysis
- NERRs System Wide Monitoring
- National Marine Sanctuaries
- Florida Keys Socioecon
- NAWQA Basins
- National Estuary Program (NEP)
- Coastal Assessment Framework
- States

Map created with ArcIMS 3.0 - Copyright (C) 1999 ESRI Inc. 0 377.00mi

Refresh Map

Interactive Mapping - Regional



Interactive Mapping - Zoom

Address http://140.90.161.143/website/NOSPrograms_HTML/default_ie.htm?Title=NOS%20Programs%20-%20HTML%20Viewer Go Links »

NOS Programs - HTML Viewer

Legend

- Selected_Features
- Benthic Surveillance
- Mussel Watch
- Tide Stations
- NAWQA Sites
- Land Cover Change Analysis
- NERRs System Wide Monitoring
- National Marine Sanctuaries
- Coastal Assessment Framework
 - Interior
 - Fluvial
 - Estuarine

Map created with Arc IMS 3.0 - Copyright (C) 1998 ESRI Inc.

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Mussel Watch

Rec	SEQ	SITE	LONGITUDE	LATITUDE	GEN_LOC	SPEC_LOC	STATE	PROGRAM	EDASUBEDA	REGION	SAL_ZONE	#SHAPE#	#ID#
1	112.00000	APCP	-84.88410	29.72417	Apalachicola Bay	Cat Point Bar	FL	MW	G100x	G	MZ	[point]	113
2	113.00000	APDB	-85.07330	29.67417	Apalachicola Bay	Dry Bar	FL	MW	G100x	G	MZ	[point]	114